Advanced Algebra   Name _____

Homework 3.3

Solving Quadratic Equations by Factoring   Period _____

SHOW ALL WORK.

Complete Parts A & B OR Parts B & C

<u>**PART A:**</u>

Factor the expression, if possible.

1. $x^2 + 6x + 5$

2. $x^2 - 7x + 10$

3. $a^2 - 13a + 22$

4. $r^2 + 15r + 56$

5. $q^2 - 11q + 28$

6. $b^2 + 3b - 40$

7. $x^2 - 36$

8. $2x^2 + 5x + 3$

9. $3n^2 + 7n + 4$

10. $9x^2 - 1$

Solve the equation.

11. $x^2 - 8x + 12 = 0$

12. $x^2 - 11x + 30 = 0$

13. $x^2 + 2x - 35 = 0$

14. $a^2 - 49 = 0$

15. $b^2 - 6b + 9 = 0$

16. $c^2 + 5c + 4 = 0$

Factor the expression, if possible.

17. $p^2 + 2p + 4$

18. $x^2 - 4x - 12$

19. $x^2 - 7x - 18$

20. $c^2 - 9c - 18$

21. $x^2 - 9x + 36$

22. $m^2 + 8m - 65$

23. $b^2 - 81$

24. $4r^2 + 5r + 1$

25. $6p^2 + 5p + 1$

26. $11z^2 + 2z - 9$

27. $15x^2 - 2x - 8$

28. $4y^2 - 5y - 4$

29. $14m^2 + m - 3$

30. $9d^2 - 13d - 10$

31. $4r^2 - 25$

32. $49n^2 - 16$

33. $12x^2 - 4x - 40$

34. $18z^2 + 36z + 16$

35. $32v^2 - 2$

36. $6u^2 - 24u$

37. $12m^2 - 36m + 27$

Solve the equation.

38. $n^2 - 6n = 0$

39. $t^2 + 10t + 25 = 0$

40. $w^2 - 16m + 48 = 0$

41. $m^2 = 7m$

42. $14x - 49 = x^2$

43. $-3y + 28 = y^2$

44. $16x^2 - 1 = 0$

45. $11q^2 - 44 = 0$

46. $14s^2 - 21s = 0$

47. $45n^2 + 10n = 0$

48. $4x^2 - 20x + 25 = 0$

49. $4p^2 + 12p + 9 = 0$

Find the value of x.

50. Area = 36


X

x+5

51. Area = 84

x+2

x+7
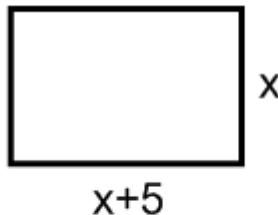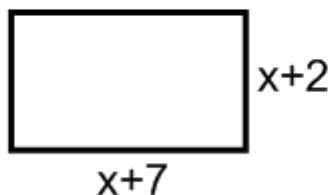
PART C:

52. A rectangular deck for a recreation center is 21 feet long by 20 feet wide. Its area is to be halved by subtracting the same distance x from the length and the width. Write and solve an equation to find the value of x. What are the deck's new dimensions?

53. **CHALLENGE** A grocery store wants to double the area of its parking lot by expanding the existing lot as shown. By what distance x should the lot be expanded?

300 ft

165 ft

Grocery store

75 ft x

75 ft

Old lot

Expanded part of lot

54. A surfboard shop sells 45 surfboards per month when it charges $500 per surfboard. For each $20 decrease in price, the store sells 5 more surfboards per month. How much should the shop charge per surfboard in order to maximize monthly revenue?

55. CHALLENGE Recall from geometry the theorem about the products of the lengths of segments of two chords that intersect in the interior of a circle. Use this theorem to find the value of x in the diagram.
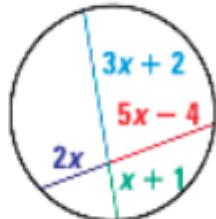
Unit 3 Homework Answers

Homework 3.3

1. $(x+5)(x+1)$ **2.** $(x-5)(x-2)$ **3.** $(a-11)(a-2)$ **4.** $(r+8)(r+7)$ **5.** $(q-7)(q-4)$

6. $(b+8)(b-5)$ **7.** $(x+6)(x-6)$ **8.** $(2x+3)(x+1)$ **9.** $(3n+4)(n+1)$ **10.** $(3n+1)(3n-1)$

11. $x=2,6$ **12.** $x=5,6$ **13.** $x=-7,5$ **14.** $a=-7,7$ **15.** $b=3$

16. $c=-4,-1$ **17.** Can't be factored   **18.** $(x+6)(x-6)$ **19.** $(x-9)(x+2)$ **20.** Can't be factored

21. $(x+12)(x-3)$ **22.** $(m+13)(m-5)$ **23.** $(b+9)(b-9)$ **24.** $(4r+1)(r+1)$ **25.** $(3p+1)(2p+1)$

26. $(11z-9)(z+1)$ **27.** $(5x-4)(3x+2)$ **28.** Can't be factored   **29.** $(7m-3)(2m+1)$ **30.** $(9d+5)(d-2)$

31. $(2r+5)(2r-5)$ **32.** $(7n+4)(7n-4)$ **33.** $4(3x+5)(x-2)$ **34.** $2(3z+4)(3z+2)$ **35.** $2(4v+1)(4v-1)$

36. $6u(u-4)$ **37.** $3(2m-3)(2m-3)$ **38.** $n=0,6$ **39.** $t=-5$ **40.** $w=4,12$

41. $m=0,7$ **42.** $x=7$ **43.** $y=-7,4$ **44.** $x=-\dfrac{1}{4},\dfrac{1}{4}$ **45.** $q=-2,2$

46. $s=0,\dfrac{3}{2}$ **47.** $n=0,-\dfrac{2}{9}$ **48.** $x=\dfrac{5}{2}$ **49.** $p=-\dfrac{3}{2}$ **50.** $x=4$

51. $x=5$ **52.** $0.5(21)(20)=(21-x)(20-x)$; 15 ft. by 14 ft.   **53.** 60 ft.

54. $340   **55.** $x=2$